## **EUROPEAN PATENT OFFICE**

## Patent Abstracts of Japan

**PUBLICATION NUMBER** 

05284765

**PUBLICATION DATE** 

29-10-93

**APPLICATION DATE** 

31-03-92

APPLICATION NUMBER

04103796

APPLICANT: CANON INC:

INVENTOR: SHINJO KATSUHIKO;

INT.CL.

H02N 10/00 G11B 9/00 // H01L 29/84

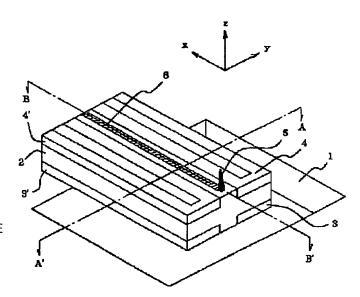
TITLE

: CANTILEVER TYPE DISPLACEMENT

ELEMENT, CANTILEVER TYPE PROBE USING THE SAME, SCAN TYPE

TUNNEL MICROSCOPE USING THE SAME PROBE AND INFORMATION

**PROCESSOR** 



ABSTRACT: PURPOSE: To improve ptoductivity, reproducibility of a cantilever type probe by forming a displacement element of one nonconductive element layer and a plurality of heat generator layers, and forming a cantilever type displacement element to be displaced by a thermal drive of the generator layer.

> CONSTITUTION: A cantilever fixed at one end to an Si substrate 1 is formed of a support 2 made of non-doped polysilicon and heat generator layers 3, 3', 4, 4'. The generator layer is made of doped polysilicon with p-type or n-type conductivity. Further, a probe 5 for sensing a tunnel current and an electrode 6 for outputting its current are formed on the cantilever. Since the support 2 of the cantilever is partly expanded and contracted in an X-axis direction under the control of currents of the layers 3, 3', 4, 4', it can be driven in X-, Y- and Z-axes. It can be moved in the X-axis direction by supplying the same currents to the entire generator layers. It is moved in the Y-axis direction by supplying the currents only to the layers 3, 4. It can be driven in the Z-axis direction by supplying the currents only to the layers 3, 3'.

COPYRIGHT: (C)1993,JPO&Japio